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### **Formation of $^{31}\text{P}$ qubit test structures by single ion implantation**

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Electron and nuclear spins of  $^{31}\text{P}$  atoms in silicon are promising candidates for the realization of a scalable solid state quantum computer architecture. Single ion implantation with low energy ( $<10$  keV), highly charged ions offers a path to the formation of single  $^{31}\text{P}$  atom arrays. We describe our development of single ion placement technology and the integration of atom arrays with control gates and single electron transistor readout structures. Silicon nanowire based single electron transistors are formed in SOI (silicon on insulator) by electron beam lithography and stress limited oxidation. We will discuss critical process integration issues.

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